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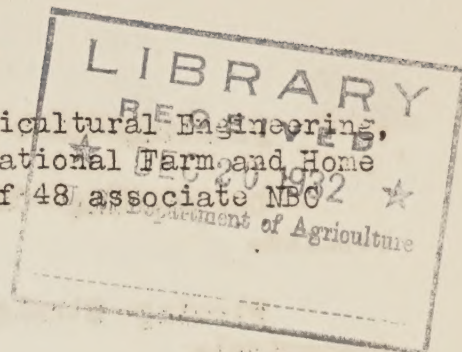




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THE YEAR IN FARM ENGINEERING RESEARCH.

A radio talk by S. H. McCrory, Chief, Bureau of Agricultural Engineering, delivered in the Department of Agriculture period of the National Farm and Home Hour, Tuesday, December 13, 1932, broadcast by a network of 48 associate NBC radio stations.



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SALISBURY:

Now we're going to have a report from the leader of the group of scientific workers who as a class have done more to change our agriculture than any other group -- the engineers. The agricultural engineering research of the Federal government is the responsibility of the Bureau of Agricultural Engineering. We're to hear today some of the results of this research during the past year from the chief of the bureau----- Ladies and gentlemen, Mr. S. H. McCrory.

McCRORY:

It gives me pleasure to visit again with you Farm and Home Hour listeners. I think most of you will understand that the aims of engineering in agriculture are to reduce the cost of production on farms in money, time, and irksome labor, and to bring to farm dwellers modern conveniences and advantages.

Most of our research during the past year has centered on important engineering problems of reducing the cost of farm production. I think the best beginning point for a report of the year's research is our study of the kind and amount of power used in operating American farms. This study vividly shows the recent increase in producing power of individual farmers. In 1850, each agricultural worker in the United States had available for his use about 1 1/2 horsepower. By 1930, our study shows, each worker had available for his use more than 6 1/2 horsepower. This did not include the horsepower available in automobiles, but it did include all other mechanical power available for doing farm work. Machines supplied nearly half of the power used on farms in 1930.

Whether animals or machines furnished the motive power, farm machinery did farm work of a variety and with an efficiency not dreamed of in 1850. I am going to sum up for you just as briefly and pointedly as I can the results of our research on various types of farm machinery during the past year.

For one thing, we conducted extensive experiments on the mechanical application of fertilizers to various crops. Under average soils and climatic conditions, we obtained the best results by placing the fertilizer in bands about two inches to each side of and two inches below the level of the seed. Now our research work has turned toward developing machinery that will place the fertilizer in this position.

Our engineers are studying possible improvements in construction and handling of machinery so as to cut down labor and power costs for production of corn and cotton. Already they have made new combinations of power, labor and equipment that will produce crops of corn with about half the amount of labor usually required. Here are some of the results of the year's test of machines for use in producing corn:

(over)



Planting--List cost least and produced most.

Cultivating--Cultivator with a rotary weeder attachment gave the best results.

Plowing--Straight plowing without previous work on cornstalks was most economical.

Picking--In the past two seasons the best performance of mechanical corn pickers was obtained early in the year. Improved machines appeared on the market this year. But further studies are necessary in order to cut down losses, which in some instances reach 20 per cent.

Well, so much for a very brief summary of our results in studies of machinery used in corn production. Now for the results on the work with cotton machinery. We found first of all that careful selection of the machinery used in producing cotton can save large amounts of man labor per unit of yield. We found that in some localities cotton growers are working the soil too much and are thus cutting down the yield by one-half.

During the year, one of our engineers working with cotton machinery developed a variable depth planter attachment. This attachment plants seed in a long vertical curve at depths varying from 1/2 inch to two inches. This type of planting practically insures a good stand of cotton regardless of weather conditions after planting. In most cases, the yield from planting with the variable depth attachment has been greater than the yield from planting with constant depth machines.

We are continuing our studies on cotton ginning at our laboratories at Stoneville, Mississippi. You people in Arkansas and Texas will also be interested in knowing that we are going ahead with the studies on direct harvesting and artificial drying of rice. The results indicate that growers and processors can obtain a high quality product by using the new methods.

Farm owners everywhere I think will be interested in the results of our studies on farm structures which showed that farm buildings well anchored to adequate foundations, and well braced, offer high resistance to wind storms. We have turned the results of these tests into practical recommendations for bracing old farm structures to resist wind and these instructions are available to any of you who wish them.

Speaking of farm structures, the investigations on the effect of temperatures within dairy barns on yield of milk and health of cows are revealing some interesting facts. The engineers and dairymen conducting the tests found that the best temperatures for dairy stables lie within the range of 50 to 55 degrees -- that temperatures above 65 degrees are too warm, and those below 40 degrees are too cold for best results.

One of the most interesting and important engineering studies we have in progress is the series of experiments on the engineering phases of soil erosion control. L. A. Jones of our bureau has talked with you about some of the results already obtained at the 10 farms in different parts of the United States where engineers and soil scientists are trying to find ways and means of cutting down the terrific losses caused by soil erosion. Terracing is the most effective



means we now know of to control erosion on cultivated lands. Our engineers are trying to build terraces so that farmers can operate machinery over them easily, and are studying the improvement of farm machinery so that it will operate more efficiently over terraces. We also are trying to find new and better ways of building soil saving dams for filling gullies and preventing them from spreading.

The most modern information on methods of terracing is being placed in the hands of your county agricultural agents as fast as it is gathered. Let me suggest that you consult your county agent for information on terracing and also on other means of using modern engineering knowledge to cut down your labor and money costs of producing crops and animal products.

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